aeromet

SEASONAL PROGRESS REPORT NO. 3
for the period
September, October and November 1976

to

ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
1860 Lincoln St., Suite 900
Denver, CO 80203

Contract No. 68-01-1946

aeromet inc.

P.O. BOX FF NORMAN, OKLAHOMA 73070
405 329-2424

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by

Aeromet, Inc.
P.O. Box FF
Norman, OK 73070

1.0 INTRODUCTION

Low level temperature and wind data were collected for the fall season of September, October and November 1976 at Casper, Wyoming; the Colorado C-b Tract 25 miles west of Rio Blanco, Colorado; Craig, Colorado; Escalante and Hanksville, Utah; Rock Springs, Wyoming; and the U-a/U-b Tract 5 miles south of Bonanza, Utah. The collection of data at the U-a/U-b site commenced October 1, 1976 and will continue through 30 September, 1977. The data were collected using a 30 gm helium filled pilot balloon with a temperature sonde attached, a single theodolite and a TSR-2 receiver/recorder twice a day every other day. The observations were made ½ hour after sunrise and at 1400L.

The pilot balloon had an ascent rate of 500 ft/min and it was tracked by a single theodolite for 12 minutes with the azimuth and elevation angles recorded every 30 seconds on a cassette tape recorder. The tape was transcribed to a pilot balloon form after the observation.

The temperature sonde operated at 403 MHz and the signal was received by a ground plane antenna at least 24 ft. AGL which was attached to the Aeromet, Inc. TSR-2 receiver/recorder. The TSR-2 receiver has a built-in Rustrak strip chart recorder and the temperature was recorded within the range from -50°C to +50°C. A baseline temperature calibration was performed with each T-Sonde by the adjustment of the recorded temperature to match the thermometer measured temperature next to the transmitting sonde. Once the calibration check was finished the balloon was released with the sonde attached and the temperature was recorded for at least 20 minutes. At the completion of each observation the data were mailed to Aeromet, Inc.

The Annual Progress Report is divided into seven parts, one corresponding to each of the seven field sites. The temperature and wind data were not edited after the completion of the Monthly Progress Reports.

2.0 DATA SUMMARY

2.1 Mixing Layer Height

The average mixing layer height was computed for the morning and afternoon based on the morning and 1400L temperature soundings. The balloon release ½ hour after sunrise is near enough to the minimum temperature to assume the correctness of the calculated mixing layer heights. The afternoon balloon release is generally not at the time of maximum heating and the user of the mixing layer height data must be aware that minor changes in the calculated values can be expected. Without equipping the field sites with minimum/maximum thermometers the extrapolation of the afternoon data cannot be justified in establishing a data base for statistical analysis. The approximation of the afternoon maximum temperature would be a "calculated guess" for there are: 1) local effects which are to be determined and would be filtered out with extrapolation, 2) mountain effects which alter the lower 1500m (e.g. downslope effects), and 3) meteorological effects which can alter the expected change in the sounding (e.g. advection, moisture, etc.).

It is felt that to better define the mixing layer height a variety of "heat island" effects should be viewed. The rigourous method would be to define 15 "heat island" effects ranging from 0 to 14°C and let the user decide which would best serve his needs. However, for this analysis 0°, +5° and +10° "heat island" effects are calculated and listed for the morning and afternoon soundings in the table Average Mixing Layer Height.

A summary of the average mixing layer heights calculated with the 0°, +5° and +10° "heat island" effects for each of the six field sites for the fall season of September, October and November are included in the report. The percent of occurrence of the average height within 250m increments above ground level is given in tabular form. The total number of soundings included in the sample populations are listed in the table.

2.2 Stability and Inversion Classification

The temperature and wind data were edited to remove data felt to cause anomalous results in the stability and inversion classification schemes. Only the stations listed prior to the table classifying the inversions were used in the calculations.

The temperature data are processed to produce for each site a seasonal summary of inversion layers and lapse rates within the inversions and from the inversion base to the surface by means of the Holzworth classificaiton scheme for inversions (Holzworth, G. C., 1974: "Climatological Data on Atmospheric Stability in the United States" paper presented at the American Meteorological Society Symposium on Atmospheric Diffusion and Air Pollution, September 9-13, 1974, Santa Barbara, California.)

The temperature and wind data are processed together to produce for each site a monthly average bivariate frequency distribution of wind direction versus wind speed represented in the 500m layer adjacent to the ground. The distribution is presented by the six Pasquill stability classes (A-F) and a summary independent of stability. If the $\Delta T/100m$ criterion is met but the wind speed criterion is not met, then the wind data are checked against the criterion

STABILITY CLASS	ΔT (°C/100m)	WIND SPEED (m s^{-1})
A	<-1.9	≤2
B	-1.9 - -1.7	≤5
C	-1.7 - -1.5	≤6
D	-1.5 - -0.5	ALL SPEEDS
E	-0.5 - 1.5	≤5
F	>1.5	≤3

for the next stability class, always cascading to the D stability class. Once the wind speed criterion is met the data are classified under the new stability class even though now the lapse rate exceeds the class criterion. For example, if the $\Delta T/100m$ value is 1.7 and the wind speed is 7 m s^{-1}, the lapse rate criterion is met for the stability class F, however the wind speed criterion is exceeded. The wind speed is greater than the 5 m s^{-1} maximum limit for class E but falls within the criterion of class D, which includes all wind speeds. As a result the observational data with a ΔT value of 1.7°C/100m and a wind speed value of 7 m s^{-1} are classified under stability class D, not class F.

The data are also punched on computer cards in a format compatible with the STAR PROGRAM of the National Climatic Center, NOAA, U.S. Department of Commerce. A detailed description of the punched output can be found in the Monthly Progress Reports.

AVERAGE MIXING LAYER HEIGHT

Utah U-a/U-b Tract

Season: September, October, November

MIXING LAYER HEIGHT (Height in meters)	PERCENT OF OCCURRENCE					
	MORNING			AFTERNOON		
	0°	+5°	+10°	0°	+5°	+10°
surface	80.0			12.9		
1 - 250m	16.7	90.0	41.4	32.2		
251 - 500m		3.3	41.4	32.2	3.3	
501 - 750m			3.4	12.9	23.3	
751 - 1000m		3.3	3.4	6.5	23.3	
1001 - 1250m	3.3				13.3	
1251 - 1500m					16.7	16.1
1501 - 1750m			3.4		6.7	6.5
1751 - 2000m			3.4			22.6
> 2000m		3.3		3.2	6.7	48.4
None defined			3.4		6.7	6.5
TOTAL NUMBER	30	30	29	31	30	31

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 33290

DATE 10/01/76 TIME 06:22MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	724.	0.89	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3347

DATE 10/01/76 TIME 13:10MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	191.	0.31	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 0

DATE 10/03/76 TIME 07:12MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	191.	1.29	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3332

DATE 10/03/76 TIME 13:58MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
381.	495.	0.24	-0.66

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3335

DATE 10/05/76 TIME 06:22MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
38.	267.	2.24	-0.76

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3330

DATE 10/05/76 TIME 13:05MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
312.	350.	0.24	-1.04

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3331

DATE 10/07/76 TIME 07:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	191.	0.76	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3339

DATE 10/07/76 TIME 13:22MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
279.	323.	0.0	-1.09

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3335

DATE 10/09/76 TIME 06:20MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	267.	2.67	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3343

DATE 10/09/76 TIME 13:55MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	114.	0.23	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3342

DATE 10/11/76 TIME 06:25MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	419.	1.69	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3341

DATE 10/11/76 TIME 12:50MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
38.	76.	0.0	-1.36

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3344

DATE 10/13/76 TIME 06:35MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	838.	1.02	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3340

DATE 10/13/76 TIME 13:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
114.	267.	0.35	-1.15

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3349

DATE 10/15/76 TIME 06:31MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	648.	1.46	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3352

DATE 10/15/76 TIME 13:02MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
937.	1127.	0.28	-0.64

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3345

DATE 10/17/76 TIME 06:33MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
38.	267.	2.78	-0.76

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3343

DATE 10/17/76 TIME 13:07MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
169.	207.	0.21	-1.29

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3347

DATE 10/19/76 TIME 06:38MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	724.	1.30	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3347

DATE 10/19/76 TIME 13:01MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
204.	357.	0.12	-1.04

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3328

DATE 10/21/76 TIME 06:50MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	991.	1.21	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3350

DATE 10/21/76 TIME 13:03MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
164.	792.	0.23	-1.22

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3322

DATE 10/23/76 TIME 06:38MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	419.	2.34	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3324

DATE 10/23/76 TIME 12:57MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
397.	454.	1.13	-1.04

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3323

DATE 10/25/76 TIME 06:38MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	381.	1.98	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3327

DATE 10/25/76 TIME 13:28MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
76.	143.	0.0	-2.41

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3325

DATE 10/27/76 TIME 06:47MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	381.	1.41	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3317

DATE 10/27/76 TIME 13:07MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
418.	467.	0.75	-1.18

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3320

DATE 10/29/76 TIME 06:48MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	1143.	0.77	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3314

DATE 10/29/76 TIME 13:02MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	76.	0.0	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3316

DATE 10/31/76 TIME 06:52MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	648.	1.36	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3315

DATE 10/31/76 TIME 13:55MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
76.	152.	0.35	-1.75

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3313

DATE 11/02/76 TIME 06:52MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	686.	1.58	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3319

DATE 11/02/76 TIME 13:51MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
304.	838.	0.13	-1.41

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3318

DATE 11/04/76 TIME 07:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	838.	0.92	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3310

DATE 11/04/76 TIME 14:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
114.	152.	0.71	-1.19

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3312

DATE 11/06/76 TIME 07:12MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
38.	1143.	1.07	-1.29

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3306

DATE 11/06/76 TIME 13:59MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
203.	889.	0.01	-1.13

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3308

DATE 11/08/76 TIME 07:10MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	495.	2.34	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3309

DATE 11/08/76 TIME 13:57MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
76.	133.	0.0	-2.62

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3311

DATE 11/10/76 TIME 07:05MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	800.	1.20	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3305

DATE 11/10/76 TIME 14:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
277.	582.	0.18	-1.01

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3471

DATE 11/12/76 TIME 13:56MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
38.	76.	0.0	-2.97

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3464

DATE 11/14/76 TIME 07:22MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	381.	1.72	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3367

DATE 11/14/76 TIME 13:56MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
76.	152.	0.13	-1.84

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3465

DATE 11/16/76 TIME 07:05MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	267.	1.08	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3472

DATE 11/16/76 TIME 14:02MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	114.	0.80	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3470

DATE 11/18/76 TIME 07:07MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	1181.	1.03	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3468

DATE 11/18/76 TIME 13:52MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
76.	848.	0.17	-6.06

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3466

DATE 11/20/76 TIME 07:09MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	343.	3.06	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3463

DATE 11/20/76 TIME 14:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	76.	2.74	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3461

DATE 11/22/76 TIME 07:10MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	1181.	0.90	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3459

DATE 11/22/76 TIME 14:40MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
182.	951.	0.19	-1.49

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3457

DATE 11/24/76 TIME 07:15MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	762.	1.72	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3458

DATE 11/24/76 TIME 13:51MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
135.	564.	0.30	-2.42

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3469

DATE 11/26/76 TIME 07:12MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
1023.	1061.	0.52	-1.08

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3462

DATE 11/26/76 TIME 14:05MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	114.	0.67	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3460

DATE 11/28/76 TIME 08:10MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
38.	495.	1.36	-3.18

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3451

DATE 11/28/76 TIME 13:52MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
781.	895.	0.0	-1.22

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3453

DATE 11/30/76 TIME 07:19MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	1257.	0.76	0.0

****

UTAH UAUB ELEV 1585 METERS SOUNDING ID 3449

DATE 11/30/76 TIME 13:48MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
501.	577.	1.25	-0.89

MONTH: OCT - NOV YEAR: 1976 UTAH UAUB ELEV 1585 METERS

HOLZWORTHIS CLASSIFICATION SCHEME FOR INVERSIONS
MODIFIED TO SHOW TOTAL NUMBER INSTEAD OF PERCENT

THICKNESS (METERS)	SFC	1-100	101-250	251-500	501-750	751-1000	1000-1500	1501-2000	2001-2500	2501-3000	TOTAL
		INVERSION BASE HEIGHT (M)									
1 - 100	2	6	2	4	1	0	1	0	0	0	16
101 - 250	6	2	2	1	0	2	0	0	0	0	13
251 - 500	9	1	1	1	0	0	0	0	0	0	12
501 - 750	5	0	2	1	0	0	0	0	0	0	8
751 - 1000	5	1	1	0	0	0	0	0	0	0	7
1001 - 1500	4	1	0	0	0	0	0	0	0	0	5
> 1500	0	0	0	0	0	0	0	0	0	0	0
INV TOTAL	31	11	8	7	1	2	1	0	0	0	61
**********											
DT/DZ 5		0	0	0	0	0	0	0	0	0	0
FROM INV 4		2	0	1	0	1	0	0	0	0	4
BASE 3		0	4	5	1	0	1	0	0	0	11
TO 2		2	3	1	0	1	0	0	0	0	7
SFC 1		7	1	0	0	0	0	0	0	0	8
**********											
NO INV TOT		0	0	0	0	0	0	DT/DZ (DEG C)/100M			
DT/DZ FOR 5		0	0	0	0	0	0	5= 0.00 TO -0.40			
SAME 4		0	0	0	0	0	0	4=-0.41 TO -0.80			
LAYERS 3		0	0	0	0	0	0	3=-0.81 TO -1.20			
AS INV 2		0	0	0	0	0	0	2=-1.21 TO -1.60			
BASE 1		0	0	0	0	0	0	1=<-1.60			
**********											

MONTH: OCT NOV YEAR: 1976 UTAH UAUB SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	0.0	0.0	0.0	0.0	0.0		0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0		0.0

RELATIVE FREQUENCY OF OCCURRENCE OF THE A STABILITY CLASS IS 0.0

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 4 SOUNDINGS FROM A SAMPLE OF 61 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: OCT NOV YEAR: 1976 UTAH UAUB SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	0.0	0.0	0.0	0.0	0.0		0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0		0.0

RELATIVE FREQUENCY OF OCCURRENCE OF THE B STABILITY CLASS IS 0.0

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 4 SOUNDINGS FROM A SAMPLE OF 61 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: OCT NOV YEAR: 1976 UTAH UAUB SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	0.0	0.0	0.0	0.0	0.0		0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0		0.0

RELATIVE FREQUENCY OF OCCURRENCE OF THE C STABILITY CLASS IS 0.0

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 4 SOUNDINGS FROM A SAMPLE OF 61 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: OCT NOV YEAR: 1976 UTAH UAUB SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.08	0.0	0.0	0.0	0.0	3.2	0.08
ENE	0.08	0.0	0.0	0.0	0.0	0.0	1.3	0.08
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.04	0.0	0.0	0.0	6.4	0.04
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.08	0.04	0.04	0.04	0.0	0.0	5.4	0.19
W	0.04	0.0	0.04	0.0	0.0	0.0	4.7	0.08
WNW	0.31	0.0	0.04	0.0	0.0	0.0	2.1	0.35
NW	0.08	0.0	0.0	0.0	0.0	0.0	2.4	0.08
NNW	0.12	0.0	0.0	0.0	0.0	0.0	1.5	0.12
AVG SPEED	1.5	3.5	7.5	13.3	0.0	0.0		0.0
TOTAL	0.69	0.12	0.15	0.04	0.0	0.0		1.00

RELATIVE FREQUENCY OF OCCURRENCE OF THE D STABILITY CLASS IS 0.46

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 4 SOUNDINGS FROM A SAMPLE OF 61 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: OCT NOV YEAR: 1976 UTAH UAUB SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.06	0.0	0.0	0.0	0.0	0.0	1.4	0.06
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.06	0.0	0.0	0.0	0.0	4.5	0.06
ENE	0.0	0.11	0.0	0.0	0.0	0.0	3.7	0.11
E	0.0	0.06	0.0	0.0	0.0	0.0	3.9	0.06
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.06	0.0	0.0	0.0	0.0	0.0	1.7	0.06
SSE	0.06	0.06	0.0	0.0	0.0	0.0	1.6	0.11
S	0.0	0.06	0.0	0.0	0.0	0.0	3.4	0.06
SSW	0.22	0.11	0.0	0.0	0.0	0.0	2.4	0.33
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.06	0.0	0.0	0.0	0.0	0.0	1.4	0.06
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.06	0.0	0.0	0.0	0.0	0.0	0.7	0.06
NW	0.06	0.0	0.0	0.0	0.0	0.0	1.1	0.06
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	1.3	5.7	0.0	0.0	0.0	0.0		0.0
TOTAL	0.56	0.44	0.0	0.0	0.0	0.0		1.00

RELATIVE FREQUENCY OF OCCURRENCE OF THE E STABILITY CLASS IS 0.32

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 4 SOUNDINGS FROM A SAMPLE OF 61 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: OCT NOV YEAR: 1976 UTAH UAUB SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.23	0.0	0.0	0.0	0.0	0.0	1.5	0.23
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.23	0.0	0.0	0.0	0.0	0.0	2.0	0.23
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.23	0.0	0.0	0.0	0.0	0.0	1.8	0.23
SW	0.08	0.0	0.0	0.0	0.0	0.0	0.2	0.08
WSW	0.15	0.0	0.0	0.0	0.0	0.0	1.2	0.15
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.08	0.0	0.0	0.0	0.0	0.0	1.3	0.08
AVG SPEED	1.5	0.0	0.0	0.0	0.0	0.0		0.0
TOTAL	1.00	0.0	0.0	0.0	0.0	0.0		1.00

RELATIVE FREQUENCY OF OCCURRENCE OF THE F STABILITY CLASS IS 0.23

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 4 SOUNDINGS FROM A SAMPLE OF 61 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: OCT NOV YEAR: 1976 UTAH UAUB SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.02	0.0	0.0	0.0	0.0	0.0	1.4	0.02
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.05	0.0	0.0	0.0	0.0	3.6	0.05
ENE	0.04	0.04	0.0	0.0	0.0	0.0	2.5	0.07
E	0.0	0.02	0.0	0.0	0.0	0.0	3.9	0.02
ESE	0.05	0.0	0.0	0.0	0.0	0.0	1.5	0.05
SE	0.02	0.0	0.0	0.0	0.0	0.0	1.7	0.02
SSE	0.07	0.02	0.0	0.0	0.0	0.0	1.8	0.09
S	0.0	0.02	0.0	0.0	0.0	0.0	3.4	0.02
SSW	0.12	0.04	0.02	0.0	0.0	0.0	2.6	0.18
SW	0.02	0.0	0.0	0.0	0.0	0.0	0.2	0.02
WSW	0.09	0.02	0.02	0.02	0.0	0.0	3.9	0.14
W	0.02	0.0	0.02	0.0	0.0	0.0	4.7	0.04
WNW	0.16	0.0	0.02	0.0	0.0	0.0	2.0	0.18
NW	0.05	0.0	0.0	0.0	0.0	0.0	1.9	0.05
NNW	0.07	0.0	0.0	0.0	0.0	0.0	1.5	0.07
AVG SPEED	1.4	3.7	7.5	13.3	0.0	0.0		0.0
TOTAL	0.72	0.19	0.07	0.02	0.0	0.0		1.00

NORMALIZED FREQUENCY DISTRIBUTION INDEPENDENT OF STABILITY

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 4 SOUNDINGS FROM A SAMPLE OF 61 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

Form 1279–3
(June 1984)

BORROWER'

DATE LOANED	BORROWER

USDI – BLM